

## SOLID-STATE POLYMERIC SENSORS, TRANSDUCERS, AND ACTUATORS

### ABSTRACT OF THE INVENTION

5           New polymeric materials and their fabrication methods that are electrically active in terms of sensing and actuation are invented. These materials are comprised of solid-state ion-conducting materials such as polyethylene oxide (PEO) and its derivatives or imbedded in a family of mixed polymer systems such as polydivinylbenzene (DVB) and polystyrene polymers. Such materials suitably  
10           electroded with conductive materials such as gold, platinum and silver exhibit large deformation (both two and three dimensionally) under low electric fields of 10's V/mm. Conversely, if these materials are deformed, they produce 10's of mV/mm electric fields that can be used as means of sensing or electromechanical  
15           powering devices for batteries.